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SYSTEM AND METHOD FOR ACTIVATION OF A WIRELESS MODULE

By:

Akihiko Toyoshima

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Carrie Merzbacher

SYSTEM AND METHOD FOR ACTIVATION OF A WIRELESS MODULE

This application is related to and incorporates herein by reference U.S. Patent Application Serial No. 09/_____, of Akhiko Toyoshima, for HOME NETWORK USING WIRELESS MODULE, filed _____, 2001 (Sony IPD 50P4257.02); U.S. Patent Application Serial No. 09/_____, of Akhiko Toyoshima, for MULTIPLE WIRELESS FORMAT PHONE SYSTEM AND METHOD, filed concurrent herewith (Sony IPD No. 50P4257.03); U.S. Patent Application Serial No. 09/_____, of Akhiko Toyoshima, for WIRELESS MODEM MODULE SERVER SYSTEM, filed _____, 2001 (Sony IPD No. 50P4257.04); U.S. Patent Application Serial No. 09/ _____, of Akihiko Toyoshima, for WIRELESS MODULE SECURITY SYSTEM AND METHOD, filed concurrent herewith (Sony IPD 50R4257.05), U.S. Patent Application Serial No. 09/ _____, of Akihiko Toyoshima, for A DEFAULT PORTAL SITE ACCESS WITH WIRELESS MODULE, filed _____, 2001 (Sony IPD 50R4257.06); and U.S. Patent Application Serial No. 09/ _____, of Akihiko Toyoshima, for SYSTEM, METHOD AND APPARATUS FOR EBEDDED FIRMWARE CODE UPDATE, filed concurrent herewith (Sony IPD 50R4257.07); and U.S. Patent Application Serial Number 09/928,582, of Baranowski, et al.; for WIRELESS MODULE, filed August 13, 2001 (Sony IPD 50N3390); and Provisional Patent Application Serial No. 60/240,001; of Juan, et al, for PORTABLE WIRELESS MODEM, filed October 13, 2000 (Sony IPD 50P4257), the benefit whose priority date is hereby claimed.

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Field of the Invention

This invention relates generally to the field of removable wireless modules. More particularly, this invention relates to a system and method for activation of a data storage and wireless transmission module.

Background of the Invention

The need for portability of data has increased over the years, and has spurred the development of removable memory devices. For example, Memory Stick™ is a removable data storage device made by Sony Corporation and is a recordable integrated circuit (IC) digital storage device having a storage capacity greater than a standard 3.5 inch floppy disk. Most importantly, Memory Stick™ is smaller than a stick of gum, very lightweight, and therefore ultra-portable. However, the need for accessability to people, information, and data has also increased despite the currently increased portability.

Due to cost and related space limitations, peripheral devices must impose a limit on the number of ports or sockets utilized for removable memory devices and other separate hardware. Currently, these peripheral devices utilize separate ports or sockets for communication and storage devices. For example, a laptop computer utilizes one socket for a storage device and another socket for communication. As the need for accessability to people, information, and data increases it would be desirable to provide accessability and portability to peripheral devices without increasing their cost or exceeding the related space limitations of the peripheral devices.

Summary of the Invention

In view of the foregoing, a wireless module is provided for wireless portability and wireless accessability to people, information, and data.

In particular, a wireless module, in one embodiment, is the similar size, shape, and form factor as the current Memory Stick™. Also, the wireless module allows for wireless communication with digital storage functionality. In one

embodiment, a method of activation of the wireless module includes providing the wireless module with initialization data, establishing a wireless module account with an activation center, transmitting operational data to the wireless module from the activation center, and storing the operational data. In a further embodiment, the wireless module may be provided to any number of peripheral devices compatible with the Memory Stick™ removable extended input/output (I/O) slot. Memory Stick™ extended I/O format meets these requirements and the wireless module will be able to be supported as one of the application devices.

These and other features and advantages of the invention will be understood upon the consideration of the following detailed description of the invention and accompanying drawings. The features of the invention believed to be novel are set forth with particularity in the appended claims. The invention itself however, both as to organization and method of operation, together with further objects and advantages thereof, may be best understood by reference to the following description taken in conjunction with the accompanying drawing.

Brief Description of the Drawing

The following detailed description, given by way of example, and not intended to limit the present invention solely thereto, will best be understood in conjunction with the accompanying drawings in which:

FIGURE 1 is a block diagram of one embodiment of a wireless module.

FIGURE 2A is a block diagram of an embodiment of the baseband signal processor circuit shown in FIGURE 1.

FIGURE 2B is a block diagram of another embodiment of the baseband signal processor circuit shown in FIGURE 1.

FIGURE 2C is a block diagram of a further embodiment of the baseband signal processor circuit shown in FIGURE 1.

FIGURE 3 is a block diagram of one embodiment of the wireless module in a system for activation.

Detailed Description of the Invention

While the present invention has been particularly shown and described with reference to an embodiment(s), it will be understood that various changes and modifications may be made without departing from the spirit and scope of this invention. It is intended that the appended claims be interpreted to cover the embodiments described herein and all equivalents thereto.

Turning now to FIGURE 1, one embodiment of a wireless module 200 is shown. Wireless module 200 includes an antenna 10 connected to a transceiver circuit 20. Transceiver circuit 20 includes a duplexer 30, a transmitter 40, and a receiver 50. Transmitter 40 and receiver 50 of transceiver circuit 20 are connected to a baseband signal processor circuit 60. Baseband signal processor circuit 60 is connected to a microprocessor 70. Memories 80 and an interface input/output (I/O) 90 are also connected to microprocessor 70. A host or peripheral unit/device 150 is connected to wireless module 200 through interface I/O 90.

In operation, wireless module 200 receives a signal(s) containing data packets through antenna 10 and forwards the received signals and data packets to duplexer 30, through receiver 50, and to baseband signal processor circuit 60. The data packets/received signals will then be forwarded to microprocessor 70 and through interface I/O 90 to peripheral device/host 150. For example, host/peripheral device 150 may be a PC, laptop, PDA, wireless telephone, or any other type of device or unit which can handle the data packets/received signals. Wireless module 200 receives and transmits data packets/received signals utilizing at least one wireless format selected from the group consisting of CDMA ONE, CDMA 2000 1X, CDMA 2000 3X, CDMA 1X EV, Wideband CDMA, GSM, GPRS and EDGE. In case peripheral device/host 150 engages in simultaneous transmission and reception of data packets, duplexer 30 and memories 80 are utilized.

FIGURE 2A shows one embodiment of baseband signal processor 60 (shown in FIGURE 1) including a modulation/demodulation unit 100 connected to a data transfer unit 110. Modulation/demodulation unit 100 demodulates and converts the received signals to a baseband signal and supplies a demodulated baseband signal

to data transfer unit 110 where data packets are extracted, e.g., an audio signal, a video signal, and control signals, from the received signals. Data transfer unit 110 supplies the extracted data packets to microprocessor 70 (shown in FIGURE 1). In case peripheral device/host 150 engages in transmission of signals containing data packets, modulation/demodulation unit 100 modulates and converts the data packets into transmission signals which are sent to data transfer unit 110 and then to transmitter 40 and transceiver circuit 20 (shown in FIGURE 1).

FIGURE 2B shows another embodiment of baseband signal processor 60 (shown in FIGURE 1) which includes an optional data packetize/depacketize unit 120 for packetizing/depacketizing transmission signals and received signals prior to sending transmission signals and received signals to transceiver circuit 20 and microprocessor 70 (shown in FIGURE 1), respectively. Data packetize/depacketize unit 120 may be implemented by techniques well known to those skilled in the art.

In a further embodiment, referring to FIGURE 2C, baseband signal processor 60 includes an error correction unit 130 for correcting data error prior to communication data to transceiver circuit 20 and microprocessor 70 (shown in FIGURE 1). Error correction unit 130 may also be implemented by techniques well known to those skilled in the art. For example, wireless local area networks (LANs) typically experience higher error rates than wired LANs, which result in retransmission of data packets. In addition, the collision avoidance mechanism is not as efficient as collision detection used in Ethernet, especially with a large number of users. Therefore, packetization/depacketization and error correction results in a more efficient transmission in wireless environments.

FIGURES 2A through 2C show various embodiments of broadband signal processor 60 (shown in FIGURE 1) for a wireless communication system. A wireless system eliminates many hardware requirements and adds mobility to a user. Generally, wireless communication may also be accomplished through the use of InfraRed (IR) or radio waves. The IEEE 802.11 and 802.11b specifications provide standards for both the InfraRed frequencies and the radio wave frequencies.

FIGURE 3 depicts one embodiment of a wireless module activation system 300 which includes wireless module 200 and peripheral device/host 150. Peripheral device/host 150 is electrically connected to wireless module 200 which is configured to transmit initialization data 210 and receive operational data 220. Wireless module activation system 300 includes a user activation web site 230 in electronic data communication with wireless module 200 and peripheral device/host 150. User activation web site 230 is configured to receive initialization data 210 and transmit operational data 220. In one embodiment, wireless module activation system 300 also includes a base-station 240 in electronic data communication with a router 250, wireless module 200, and user activation web site 230. Router 250 is in electronic data communication with user activation web site 230 through an intranet/internet 260. Wireless module 200 is configured to be removably connected to peripheral device/host 150.

In initial activation, wireless module 200 is provided with initialization data 210 which, in one embodiment includes a preliminary internet protocol address 270 and an electronic serial number (ESN) 280. Activation then progresses by establishing a wireless module account (not shown) with an activation center (not shown) through user activation web site 230 which engages in transmitting operational data 220 to wireless module 200 from the activation center. In one embodiment, operational data 220 includes a permanent internet protocol address 290. Initialization data 210 is transmitted by connecting wireless module 200 to peripheral device/host 150 and establishing an electronic data connection with the activation center also through user activation web site 230.

Establishing the wireless module account is accomplished by a user (not shown) supplying personal information to the activation center. The personal information may include the user's name, address, credit card information, etc., to the activation center which will store the user's personal information and complete electronic serial number 280 in the wireless module account. User activation web site 230 transmits permanent internet protocol address 290 which in one embodiment is stored in wireless module 200. Permanent internet protocol address 290 is provided

to wireless module 200 once the wireless module account is established and is used until wireless module 200 is reset, deactivated, and can be stored to a non-volatile memory if wireless module 200 has such a device in it. In another embodiment, permanent internet protocol address 290 is stored in peripheral device/host 150. In a further embodiment, electronic serial number 280 is stored within peripheral device/host 150 which is removably connected to wireless module 200.

A wireless module activation server (not shown) includes user activation web site 230 for receiving initialization data 210 and transmitting operational data 220. Activation and deactivation of wireless module 200 is accomplished through user activation web site 230 which is in electronic data communication with all wireless module accounts. In one embodiment, the wireless activation server not only facilitates activation of wireless module 200 but also contains all of the wireless module accounts and all wireless module account data. In another embodiment, the wireless activation server is only in electronic data communication with the wireless module accounts.

Various other modifications and alterations in the structure and method of operation of this invention will be apparent to those skilled in the art, without departing from the scope and spirit of the invention. Although the invention has been described in connection with specified preferred embodiments, it should be understood that the invention as claimed should not be unduly limited to such specific embodiments. It is intended that the following claims describe the scope of the present invention and that the structures and methods within the scope of these claims and their equivalents be covered thereby.